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ABSTRACT

Based on questionnaire data collected from a sample of employers, this phase of a larger research project ascertained employment opportunities in the area of applied biological and agricultural occupations in the metropolitan area of Chicago. Specific fields of business surveyed by stratified random sample were animal care, animal health care, arboriculture, floriculture, golf course related, landscaping, nursery and lawn care, small engine sales and service, and recreation. The data were analyzed by summing the number of job opportunities in each job title and projecting the data from the sample to estimate its total job opportunities in the population. A major conclusion of the study was that ample job opportunities exist in the Chicago area to merit the implementation of vocational programs in applied biological and agricultural occupations. (JS)

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EMPLOYMENT OPPORTUNITIES IN APPLIED BIOLOGICAL AND AGRICULTURAL OCCUPATIONS IN THE METROPOLITAN AREA OF CHICAGO

by

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Research Report

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EMPLOYMENT OPPORTUNITIES IN APPLIED BIOLOGICAL AND AGRICULTURAL OCCUPATIONS IN THE METROPOLITAN AREA OF CHICAGO

INTRODUCTION

In order to determine the feasibility of developing programs in any vocational area, the employment opportunities should be ascertained. If training is to be offered the graduates from the program will expect to be able to obtain employment in the area for which training was received. Thus, this phase of the project was designed to ascertain the employment opportunities in applied biological and agricultural occupations in the metropolitan area of Chicago. This information when coupled with student interest will assist the program developers in designing career programs in applied biological and agricultural occupations that will meet both the needs of the students and the employment needs of the various agriculturally related industries.

DESIGN AND PROCEDURES

This phase of the study was designed to determine present and future manpower needs in the various areas of applied biological and agricultural occupations in the metropolitan area of Chicago. Collection of data was by a mailed questionnaire.

Identification of the Population

The population for the study was delimited to include the agricultural business in the city of Chicago and 46 of the contiguous suburbs. These suburbs were:

Alsip
Bedford Park
Bellwood
Berkeley
Berwyn
Blue Island
Bridgeview
Broadview
Brookfield
Chicago Ridge
Cicero
Elmwood Park
Evanston
Evergreen Park

Forest Park	Northlake
Forest View	North Riverside
Franklin Park	Oaklawn
Harwood Heights	Oak Park
Hillside	Park Ridge
Hodgkins	Riverdale
Justice	River Forest
LaGrange	River Grove
LaGrange Park	Riverside
Lincolnwood	Rosemont
Lyons	Schiller Park
Maywood	Skokie
Melrose Park	Stickney
Morton Grove	Summit
Niles	Westchester
Norridge	Wilmette

All of the project area was located in Cook County.

Agricultural businesses were defined as those businesses which require knowledge and skills related to agriculture. Businesses fitting this definition were grouped into nine areas. These were:

1. Animal care
2. Animal health care (veterinary)
3. Arboriculture
4. Floriculture
5. Golf course related
6. Landscaping
7. Nurseries and lawn care centers
8. Small engine sales and service
9. Recreation

In order to maximize the number of employers identified, contacts were made with trade and business associations, state agencies, and persons within the industries. Directories from the chamber of commerce as well as the telephone company were also utilized.

The sample. A stratified random sample was obtained such that each area of applied biological and agricultural occupations was represented by 20 percent of those identified except in those cases where 20 percent was not equal to or greater than twenty. Thus, cases where fewer than 100 employers were identified a higher percentage of the identified population was selected.

Collection of Data

The instruments used in the employer survey (Appendix V-A) was developed by the researchers for use in this study. The instruments were designed to furnish information about the number of persons employed, vacancies, additions and turnovers in the next five years, years of education desired, new employees hired during the year prior to the study and general information concerning the employers' evaluation of high school training related to their business. Similar forms were employed for the nine areas of applied biological and agricultural occupations with only the job titles being changed. Job titles were identified by utilizing the expertise of the research staff members and validated by telephone interviews with a sample of Chicago employees not included in the random sample.

The instrument and cover letter (Appendix V-B) with a stamped self-addressed envelope were mailed to each employer in the sample. Follow-up letters (Appendix V-C) were mailed to the nonrespondents at the end of two weeks and again at the end of four weeks following the original mailing.

Analysis of Data

The data regarding employment opportunities were analyzed by summing the number of employment opportunities in each job title and projecting these data to the total population. In projecting the data from the sample to estimate the total job opportunities in the population the following formula was employed to obtain an adjusted population:

$$\text{Adjusted Population} = \left[1 - \left(\frac{\text{Number of no forwarding addresses}}{\text{Sample Size}}\right) - \left(\frac{\text{Number of Respondents Out of Business}}{\text{Number of Respondents}}\right)\right] \text{(Total Population)}$$

The number of current jobs and job opportunities was calculated by taking a constant derived by dividing the adjusted population by the number of usable

returns received times the sum of the data for each of the job titles. This can be represented by the formula:

$$\text{Projected Opportunity} = \left(\frac{\text{Adjusted Population}}{\text{Number of Usable Returns}}\right) \text{(Number of Jobs reported by Respondents)}$$

Frequency counts and percentages were employed to summarize the data for the general information, e.g. the employees evaluation of high school training related to their area of business.

RESULTS

Results of this phase of the study are presented in two divisions: 1) employment opportunities in applied biological and agricultural occupations and 2) the employers' attitudes toward occupational preparation of high school students in their area of specialization. Employment opportunities are presented for the areas of 1) animal care, 2) animal health care (veterinarian), 3) arborist, 4) floriculture, 5) golf course related 6) landscaping, 7) nursery, 8) recreational areas, and 9) small engine repair.

Employment Opportunities

The employment data concerning the number of persons, employment, vacancies, turnover, and education desired for each of the nine occupational areas are presented in turn.

Animal Care. Data concerning the employment opportunities in the area of animal care are presented in Table V-1. Vacancies were reported in the jobs of groomer, pet salesman, and miscellaneous. When a projection was made to estimate the number of jobs that would be available in the total population the number of full time vacancies that were available was 12, 12, and zero respectively, while 210, 124, and 12 part-time job vacancies were estimated to exist in the same job titles. When the number of vacancies the employers estimated were considered it was observed that many of the employers were unable or unwilling to estimate the number of vacancies that they would have during the next five years. Many of the questionnaires were returned with question marks in the response column indicating turnover while other employers wrote statements regarding their inability to estimate how many employers would be needed due to turnover. Thus, the employment opportunity estimates made are probably less than what will exist during the five years following the survey.

Table V-1. Employment Opportunities in Animal Care

Job Title	Present Employment		Projected Employment		Present Vacancies		Projected Vacancies		Turnover Next 5 Years		Projected Turnover		Education Desired	
	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time
1. Manager	22	2	272	25					18	10	223	124	12	
2. Receptionist	4	4	49	49					1		12		12	
3. Bookkeeper	8	2	99	25									16	
4. Kennel Keeper	25	21	309	260					12		149		12	11
5. Groomer	13	301	161	3725	1	17	12	210	32	24	396	297	12	11
6. Pet Salesman	7	300	87	3712	1	10	12	124	10	1	124	12	12	12
7. Clerks	2		25											
8. Technicians	3		37											
9. Secretaries	11		136											
10. Drivers	5	2	62	25										
11. Stockman	7	2	87	25					1		12			
12. Miscellaneous	5		62			1		12					12	
TOTAL	112	634	1386	7846	2	28	24	346	74	35	916	433		

Even with these limitations the total five year turnover in the area of animal care for the total population was estimated to be 916 full-time jobs and 433 part-time jobs. These jobs were in the areas of groomer, pet salesman, manager, kennel keeper, receptionist and stockman. The respective estimated number of full-time jobs turnovers in these areas were 396, 124, 223, 149, 12, and 12, while the respective number of part-time positions for the same job titles was 297, 12, 124, 0, 0, and 0.

Education for these positions was typically listed as 12 years. Here an average of the number of years of education desired for a particular job title was averaged for those who responded to this section of the questionnaire.

Animal Health Care. The survey of veterinarians to ascertain the number of job opportunities available in their establishments at the time of the study and those projected for the next five years yielded the data reported in Table V-2. At the time of the study vacancies existed in the job titles of receptionist, kennel keeper, veterinarian's assistant, maintenance man, and groomer. The full-time vacancies for these jobs numbered 2, 1, 2, 1, and 1 respectively. When projected to the total population the job vacancies numbered 14, 7, 14, 7, and 7. Part-time vacancies existed for the job titles of receptionist, kennel keeper, veterinarian's assistant, and maintenance man; the respective numbers being 3, 3, 1, and 1 in the sample and 20, 20, 7, and 7 when projected to the population.

Veterinarians appeared to be better able to estimate the rate of turnover than many businessmen in other areas of applied biological and agriculture occupations. Here the respective numbers of projected turnovers for the job titles of receptionist, keenel keeper, laboratory technician, veterinarian's assistant, maintenance man, bookkeeper, and groomer were 149, 128, 7, 68, 61,

Table V-2. Employment Opportunities in Animal Health Care

Job Title	Present Employment		Projected Employment		Present Vacancies		Projected Vacancies		Turnover Next 5 Years		Projected Turnover		Education Desired	
	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time
1. Receptionist	13	34	88	230	2	3	14	20	22	63	149	426	12	11
2. Kennel Keeper	13	42	88	284	1	3	7	20	19	83	128	561	12	12
3. Laboratory Technician	2	42	14	284					1	6	7	41	14	
4. Veterinarian's Assistant	9	11	61	74	2	1	14	7	10	14	68	95	12	12
5. Maintenance Man	8		54		1	1	7	7	9	77	61	521	10.5	10
6. Bookkeeper	2	1	14	7					1		7			
7. Groomer					1		7			20		135		
	47	130	319	879	7	8	49	54	62	263	420	1779		

7, and 0 full-time positions and 426, 561, 41, 95, 521, 0 and 135 part-time jobs.

Arborist Culture. Shown in Table V-3 are those data gleaned by the survey of arborists. The response of this group was low and incomplete; thus the data were not considered to be valid for turnover. The vacancies for the job titles of trimmer, topper, baller and ropeman were considered to be valid. Full-time vacancies reported by respondents for these titles numbered 5, 5, 2, and 0 while part-time vacancies numbered 0, 1, 0, and 1 respectively. Projected to represent the total population the vacancies for the same job titles were respectively 38, 38, 15, and 0 full-time and 8, 0, 0, and 8 part-time jobs. Thus a projected total of 91 full-time and 16 part-time vacancies existed at the time of the survey.

Projected turnover will not be discussed here due to the problems encountered in data collections in this area.

Floriculture. The sample for the area of floriculture included persons in retail floriculture. This industry by nature and by tradition has been primarily operated by families who hire only a minimal number of employees. Thus, for the persons desiring to work extensively in this business usually find it necessary to buy into the operation. Possibilities for entrepreneurship were not investigated in this study. The data in Table V-4 show that some vacancies, both full and part-time, did exist. Vacancies included three designers, one deliveryman, one gardener, and three laborers. Projected to the total population the respective job vacancies that could be expected for these job titles were 36, 12, 12, and 36 respectively.

Full-time vacancies due to job turnovers and additions for the next five years were expected to exist for the job titles of manager, designer,

Table V-3. Employment Opportunities in Arboriculture

Job Title	Present Employment		Projected Employment		Present Vacancies		Projected Vacancies		Turnover Next 5 Years		Projected Turnover		Education Desired	
	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time
1. Manager	8	1	61	8						2		15	14	
2. Supervisor	12		91						2		15		14	
3. Groundsman	7	9	53	68					12	10	91	76	12	
4. Ropeman	10		76			1		8					11	
5. Climber	9		68		5	1	38	8	5		38		11	
6. Trimmer	9	1	68	8	5		38						11	
7. Topper	1		8										12	
8. Baller		3		23	2		15							
9. Operator	16	33	121	250										
10. Laborer	3	2	23	15										
11. Landscaper	10	18	76	136										
12. Mechanic	1		8											
TOTAL	86	67	653	508	12	2	91	16	19	12	144	91		

Table V-4. Employment Opportunities in Floriculture

Job Title	Present Employment		Projected Employment		Present Vacancies		Projected Vacancies		Turnover Next 5 Years		Projected Turnover		Education Desired	
	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time
1. Manager	29	1	346	12					4	4	48	48		
2. Designer	41	14	489	167	3		36		9	4	107	48		
3. Salesman	35	12	417	143					4	12	48	143		
4. Deliveryman	25	32	298	382	1		12		7	5	83	60		
5. Bookkeeper	10		119											
6. Special Event Coordinator														
7. Greenhouse Maintenance	4		48											
8. Key Punch Operator	3		36			12		143	2		24			
9. Gardeners	91		1085		1		12		12		143			
10. Laborers	30		358		3		36		10		119			
11. Special Event Helper	2	13	24	155										
12. General Worker	2	2	24	24										
TOTAL	272	74	3244	883	8	12	96	143	48	25	572	299		

salesman, deliveryman, key punch operator, gardener, and laborer. The respective numbers of vacancies for the employees in the sample being 4, 9, 4, 7, 2, 12, and 10. Projected to the total population this represents 48 managers, 107 designers, 48 salesmen, 83 deliverymen, 24 key punch operators, 143 gardeners, and 119 laborers. Numbers of part-time vacancies estimated to exist in the five years following the survey for the positions of manager, designer, salesman, deliveryman, were 4, 4, 12, and 5 respectively. Projected to estimate the turnover in the total population, the respective number of job vacancies the next five years after the study for these job titles would be estimated to be 48, 48, 143, and 60.

Golf Course Related Occupations. With the estimates of only nine golf course superintendents in the population area, it is apparent that the population area included only a fraction of the golf courses in the greater Chicago area. Even with these limitations, vacancies did exist for both full-time and part-time jobs. A full-time assistant superintendent, greenskeeper and two technicians were needed by those golf course establishments in the sample. Projections to the total population indicated an estimated 2, 2, and 4 positions available for these occupations. These data appear in Table V-5.

Part-time job vacancies were reported for the job titles of greenstender, mechanic, laborer, and technicians, the respective numbers of vacancies being 2, 3, 5, and 4. Projected to the total population the estimated jobs in the same titles was 4, 6, 9, and 7.

Turnovers in full-time positions due to resignations, retirements, and additions were expected by the respondents in the job of superintendent, assistant superintendents, greenskeeper, mechanic, laborer, equipment operator, and technician, the respective number of positions being 6, 4, 2, 1, 6, and 2.

Table V-5. Employment Opportunities in Golf Course Related Occupations

Job Title	Present Employment		Projected Employment		Present Vacancies		Projected Vacancies		Turnover Next 5 Years		Projected Turnover		Education Desired	
	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time
1. Superintendent	5		9						6		11			
2. Ass't. Superintendent	1		2		1		2		4		7			
3. Greenskeeper	3		6		1		2		2		4			
4. Greenstender	2	10	4	19	2		4		32		59			
5. Mechanic	2		4		3		6		1	24	2	45		
6. Laborer	6	9	11	17	5		9		6	20	11	37		
7. Equipment Operator	4	3	7	6					2	6	4	11		
8. Technician	3	10	6	19	2	4	4	7	6	28	11	52		
TOTAL	26	32	49	61	4	14	8	26	27	110	50	204		

Projected to estimate the total number of turnovers in the total population for the same occupations the number of turnovers would be 11, 7, 4, 2, 11, 4, and 11 respectively. Estimated turnovers for the part-time positions of greenstender, mechanic laborer, equipment operator, and technician numbered 32, 24, 02, 6, and 28 respectively for the sample and 59, 45, 37, 11, and 52 for the total population.

Landscaping. The area of landscaping is similar to golf course related occupations in that the researchers anticipate that the greater opportunity for landscaping would be in the developing suburban area rather than the part of the city which is already well developed. The study area was the latter. Due to a low percentage of returned questionnaires the projection factor for this area is quite large and allows for the possibility of greater error in projecting from the sample to the population.

As shown in Table V-6, vacancies in full-time jobs reported by the respondents were in the area of planter and sodder, general worker, and ground man. Projected to the total population it was estimated that 20 planters and sodders, 40 general workers, and 40 ground men were needed at the time of the study. In addition, part-time employees were needed for the job of landscape architect, planter and sodder, and ground man. Here the respective positions that were estimated to exist in the population was 20, 80, 20, 40, and 40 respectively.

Respondents from the landscaping industry estimated that vacancies would exist during the five years following the survey in all of the job titles listed on the survey. Projected to the total population vacancies for the full-time positions of landscape architect, landscape consultant, planter and sodder, specialist, landscape draftsman, bookkeeper, receptionist, general

Table V-6. Employment Opportunities in Landscaping

Job Title	Present Employment		Projected Employment		Present Vacancies		Projected Vacancies		Turnover Next 5 Years		Projected Turnover		Education Desired	
	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time
1. Landscape Architect	4	1	80	20		1		20	8	3	159	60	15	12
2. Landscape Consultant	2	1	40	20					2		40		16	12
3. Planter and Sodder	10	7	199	139	1	4	20	80	10	12	199	239		12
4. Specialist	1	1	20	20					1		20			12
5. Landscape Draftsman						1		20	12		239			12
6. Bookkeeper	6	2	119	40					2	1	40	20	14	12
7. Receptionist	3	1	60	20					2	10	40	199		12
8. General Worker	1	3	20	60	2	2	40	40	10	4	199	80		
9. Tree Climber	3	1	60	20					2		40		12	12
10. Ground Man	2		40		2	2	40	40	8	5	159	99	12	12
11. Tree Expert	2		40						2		40		16	
TOTAL	34	17	678	339	5	10	100	200	59	35	1175	697		

worker, tree climber, ground men, and tree expert numbered 159, 40, 199, 20, 239, 40, 40, 199, 40, 195, and 40 respectively. Part-time positions for the same job titles were estimated to be 60, 0, 239, 0, 0, 20, 199, 80, 0, 99, and 0. Thus, a total of 1175 full-time positions and 697 part-time positions were estimated to be available during the five years following the study.

Nursery and Lawn Care. It was estimated, as shown in Table V-7, that 1566 full-time and 1046 part-time employees were employed by nursery and lawn care centers in the population area. In addition to those employed, a projected 65 full-time and 109 part-time salesmen were needed. Positions also existed for deliveryman with the estimated number being 33 full-time and 44 part-time. Part-time positions also existed for the titles of manager, nursery worker, foreman and mechanic. The projected number of vacancies in these titles was 44, 22, 11, and 11 respectively. A projected 22 consultants, 11 managers, 109 deliverymen, 1633 nursery workers and 54 mechanics were estimated to be needed in full-time positions to fill vacancies due to turnover during the five years following the study; while an estimated 152 deliverymen, 152 nursery workers, and 109 mechanics were estimated to be needed in part-time positions for the same time period.

Recreation. Although a complete study of the occupations in the recreational areas was conducted and data reported in Table V-8 the discussion will be concerned with the job titles of park superintendents, animal keeper, park maintenance, park naturalist. From the list of full-time vacancies, one each was reported for the job titles of animal keeper and park maintenance. Projected to the population it was estimated that nine jobs existed in each of these positions. Part-time vacancies were reported for the position of park superintendent and park maintenance, numbering 6 and 20 respectively. Projected

Table V-7. Employment Opportunities in Nursery and Lawn Care

Job Title	Present Employment		Projected Employment		Present Vacancies		Projected Vacancies		Turnover Next 5 Years		Projected Turnover		Education Desired	
	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time
1. Consultant	2		22						2		22		14	
2. Manager	20	5	217	54		4		44	1		11		13.5	13
3. Salesman	30	27	326	294	6	10	65	109					12	12
4. Bookkeeper	9	2	98	22									13	
5. Delivery Man	17	11	185	120	3	4	33	44	10	14	109	152	12	12
6. Nursery Worker	31	36	337	391		2		22	15	14	163	152	10	10
7. Foreman	24	1	261	11		1		11					12	12
8. Mechanic	5	2	54	22		1		11	5	10	54	109	10	10
9. Stockman	1	4	11	44										
10. Cashier	2	4	22	44										
11. Maintenance Man	2	4	22	44									11	11
12. Accountant	1		11										18	18
TOTAL	144	96	1566	1046	9	22	98	241	33	38	359	413		

Table V-8. Employment Opportunities in Recreation

	Present Employment		Projected Employment		Present Vacancies		Projected Vacancies		Turnover Next 5 Years		Projected Turnover		Education Desired	
	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time
1. Park Superintendent	16		147			6		55	11	8	101	74	16	16
2. Animal Keeper	124	12	1143	111	1		9						12	12
3. Architect	2		18						1		9		16	
4. Park Maintenance	1200	41	11,060	378	1	20	9	184	96	32	885	295	12	
5. Recreation Supt.	98	300	903	2765	8	19	74	175	24	118	221	1088	16	
6. Park Naturalist	9	7	83	65									12	
7. Crafts Instructor	53	32	489	295	2	4	18	37	3	11	28	101	12	
8. Physical Ed. Inst.	3	12	28	111		2		18	5	16	46	147	16	15
9. Recreational Leader	3	356	28	3281		2		18	3	815	28	7512	16	14
10. Music Instructor		12		111						3		28	14	13.3
11. Drama Instructor	3		28			1		9		12		111	12	11.5
12. Specialist		10		92		10		92		10		92	16	
TOTAL	1511	782	13,927	7209	12	64	110	588	143	1025	1318	9448		

to estimate the total population, vacancies in these two job titles were estimated to be 55 and 184 respectively.

Turnover estimates for the next five years for the job titles under consideration were 11 full-time and 8 part-time park superintendents and 96 full-time and 32 part-time park maintenance men. Projected to the total population this would be a turnover of 101 full-time and 74 part-time park superintendents while 885 full-time and 295 part-time park maintenance men would be needed.

Small Engine Repair. Small gas engine repair is an area frequently claimed by both industrial oriented occupations instructors and instructors of agricultural occupations. Thus, information obtained by the survey of this area will likely be of interest to instructors in both of these instructional areas.

As shown in Table V-9 vacancies existed only for the jobs of mechanic and salesman. Full-time vacancies reported by the respondents number two in each job title, thus, the projected vacancies was 16 for each title. Part-time vacancies numbered 3 mechanics and 1 salesman for the sample and 24 and 8 respectively when projected to the total population.

Projected turnover for the total population was estimated at 16 full-time and 40 part-time mechanics, 8 full-time and 8 part-time partsmen.

It should be noted that opportunities for entrepreneurship cannot be estimated here.

Employees Hired During Past Year. Because it was felt that employers knew better what they had done than what they would be doing they were asked to indicate the total number of employees they had hired during the past year. These data, reported in Table V-10, indicate that in addition to the

Table V-9. Employment Opportunities in Small Engine Repair

Job Title	Present Employment		Projected Employment		Present Vacancies		Projected Vacancies		Turnover Next 5 Years		Projected Turnover		Education Desired	
	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time
1. Mechanics	12	8	97	64	2	3	16	24	2	5	16	40	12	11
2. Parts Manager	2		16										12	11
3. Set-up Man	2	5	16	40									12	11
4. Salesman	12	13	97	105	2	1	16	8	1	1	8	8	12	11
5. Deliveryman	8	6	64	48										
6. Parts Man	4		32							48		386		
7. Manager	1		8											
TOTAL	41	32	330	257	4	4	32	32	3	54	24	434		

Table V-10. Number of Employees Hired During the Year Prior to the Study by the Employers in the Various Areas of Applied Biological and Agricultural Occupations

Area	Number Reported by Respondents		Number When Projected To Total Population	
	Full-Time	Part-Time	Full-Time	Part-Time
Aboriculture	48	23	363	174
Animal Care	32	16	396	198
Animal Health Care	23	55	155	372
Floriculture	25	38	298	453
Golf Course Related	3	52	6	97
Landscaping	7	14	139	278
Nursery and Lawn Care	39	49	424	533
Recreation	30	34	277	313
Small Engine Repair	16	22	129	177
TOTAL	223	303	2187	2594

Table V-11. Influence of Applicants' Specific High School Training Related to Prospective Employment on Employers' Selection of Employees

Area	Percentage Indicating Training Would Influence Selection	Percentage Indicating Training Would Not Influence Selection
Animal Care	75.00	25.00
Animal Health Care	93.33	6.67
Aborist	80.00	20.00
Floriculture	100.00	0.00
Golf Course Related	100.00	0.00
Landscaping	100.00	0.00
Nursery and Lawn Care	83.33	16.67
Recreation	89.48	10.52
Small Engine Repair	100.00	0.00

vacancies existing at the time of the survey 2187 full-time and 2595 part-time employees were estimated to have been hired by the total population of employers during the year prior to the study. In declining order of estimates full-time employees hired by the total population the areas ranked 1) nursery and lawn care, 2) animal care, 3) aboriculture, 4) floriculture, 5) recreation, 6) animal health care, 7) landscaping, 8) small engine repair, and 9) golf course related.

Value of Training

The employers of the various areas were asked to indicate whether or not specific high school training related to their business would influence their selection of potential employees. As shown in Table V-11 a preponderence of the employers indicated that such training would in fact be an influence in their selection of employees. All of the employers in floriculture, golf course related, landscaping, and small gasoline engine repair indicated that specific high school training related to the prospective employment would influence their selection of a potential employee. Employees in the animal care (kennels, etc.) area were the least likely to respond that such training would influence their selection. Here one-fourth (25.0%) indicated that specific high school training would not effect their hiring choice.

Specific High School Training. Employers were asked to indicate whether or not they would hire a new high school graduate who had had specific training related to the prospective employment if they had a job vacancy. As shown in Table V-12 all of the respondents in the areas of animal health care, aboriculture, golf course related, landscaping and small engine repair indicated the affirmative. The employment area with the highest percentage of respondents who indicated they would not hire a recent high school graduate was the area

Table V-12. Percentage of Employers Who Would and Would Not Hire a New High School Graduate With Specific Training Related to the Prospective Employment

Area	Would	Would Not
Animal Care	92.86	7.14
Animal Health Care	100.00	0.0
Aboriculture	100.00	0.0
Floriculture	90.63	9.37
Golf Course Related	100.00	0.0
Landscaping	100.00	0.0
Nursery and Lawn Care	85.71	14.29
Recreation	89.47	10.53
Small Engine Repair	100.00	0.0

of nursery and lawn care. Here, however, only one in seven employers indicated the negative.

These data tend to support the premise that occupational education in specific areas of applied biological and agriculture would be of value to young men and women seeking jobs in these areas. However, some employers may not hire anyone below a specific age, therefore excluding recent high school graduates, whether with or without training.

SUMMARY, DISCUSSION, AND CONCLUSIONS

Presented in this section are a summary of procedures, discussion of results, and conclusions relating to the employment opportunities in applied biological and agricultural occupations in a portion of the greater Chicago area.

Summary

The primary purpose of this phase of the research was to ascertain the employment opportunities in the area of applied biological and agricultural occupations in the metropolitan area of Chicago. The purported objective of the study was to assist program developers in designing career programs in applied biological and agricultural occupations to meet both the needs of the students and the various phases of the applied biological and agricultural occupations industries.

The population area included the city of Chicago and 46 of the contiguous suburbs. The areas of applied biological and agricultural occupations identified to be surveyed included animal care, animal health care, aboriculture, floriculture, golf course related, landscaping, nursery and lawn care, small engine sales and service, and recreation. The populations were identified by utilizing various association directories, as well as the telephone directory.

A random sample was obtained such that each occupational area was represented by 20 percent of those identified, unless the 20 percent was not equal to 20. Thus, a sample of at least 20 employers was obtained for all areas. A questionnaire designed specifically for use in the study along with a cover letter was mailed to each of the employers included in the sample.

The data were analyzed by summing the number of job opportunities in each job title and projecting the data from the sample to estimate the total job opportunities in the population. Data concerning attitudes of the employers were analyzed by obtaining frequency counts and computing percentages.

Discussion

Data from a mailed questionnaire can rarely be considered as reliable as data collected from an interview. When employment opportunities surveys are conducted by mail the estimates of five year turn-over are frequently left blank while on the other hand when surveys are conducted by personal interviews the employer may be forced into making a projection when he has no knowledge of the rate of turn over in his business. Thus, the results especially for five year projections of this survey should be interpreted as being below the actual need rather than being inflated. Many employers placed question marks in the columns asking for five year projections of the number of employees needed. The number of vacancies at the time of the survey as well as the number of employees hired during the past year can be considered as being fairly reliable.

Information regarding opportunities for occupations related to the care of animals were obtained from veterinarians, pet care kennels, and pet sales businesses. As shown in Table V-13, when the job opportunities were combined

for animal care and animal health care 73 full-time jobs and 400 part-time jobs were estimated vacant at the time of the survey. At a time when unemployment was high this appeared to be a large number of jobs. Vacancies estimated to exist during the five years following the survey numbered 1336 full-time and 2512 part-time. These findings were substantiated by the fact that an estimated 551 full-time and 570 part-time employees had been hired during the year prior to the study. Thus, the estimated number of full-time employees needed during the five years following the survey may be low while the number of part-time employees appears to be approximately accurate if a straight line of demand can be assumed.

It has also been called to the researcher's attention that the research hospitals in the Chicago area employ a large number of persons to care for laboratory animals and have difficulty hiring and retaining persons in these positions. Data were not collected from this source of job opportunities.

Data regarding job opportunities related to the care and sales of plants were obtained by a surveying, aborists, floriculturists, golf course superintendents, landscapers, and nurserymen. A summary of these data are presented in Table V-14. Projections were based on a formula based on sample size and total population; thus, the employment opportunities were an estimate based on number of vacancies and estimated turnover reported by the respondents in the sample.

Here the estimated number of vacancies that existed at the time of the survey was 393 full-time and 418 part-time. The projected turnover for the five years following the survey was 2300 full-time and 1704 part-time employees. Assuming a straight line of employment needs, this figure is low when it is compared to the number of new hires during the year prior to time of the study.

Table V-13. Summary of Projected Employment Opportunities and Projected Number of New Hires During the Year Preceding the Study in Occupations Related to Animals

Area	Projected Employment		Projected Vacancies		Projected Turn-over		Projected Number New Hires in Past Year	
	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time
Animal Health Care (Veterinarians)	319	879	49	54	420	1779	396	198
Animal Care	1386	7846	24	346	916	773	155	372
TOTAL	1705	8725	73	400	1336	2512	551	570

Table V-14. Summary of Projected Employment Opportunities and Projected Number of New Hires During the Year Preceding the Study in Occupations Related to Plants

Area	Projected Employment		Projected Vacancies		Projected Turn-over		Projected Number New Hires in Past Year	
	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time
Aboriculture	653	508	91	16	144	91	363	174
Floriculture	3244	882	96	143	572	299	298	453
Golf Course Related	49	61	8	26	50	204	6	97
Landscaping	678	339	100	200	1175	697	139	278
Nursery Related Occupations	1566	1046	98	33	359	413	424	533
TOTAL	6190	1836	393	418	2300	1704	1230	1535

Based on the 1230 full-time and 1535 part-time employees hired, 6150 full-time and 7675 part-time employees will be needed to fill vacancies for the population of employees identified as operating businesses related to the growing, caring and selling of plants. This discrepancy can be accounted for by the number of employers that indicated that they were unable to guess how many new employees they would need for the five year period following the survey.

It should be noted here that the population area did not include new suburbs where the greatest amount of landscaping would occur nor did it include the area in which most of the golf courses are located. Thus, if students from the city are willing to relocate in these areas it is probable that a greater number of jobs could be found.

The area of recreation surveyed included a variety of jobs unrelated to applied biology and agriculture. However, for park maintenance alone 9 full-time and 184 part-time jobs were estimated to exist in the total population. Turnovers for the five years following the survey for the same job titles were estimated at 885 full-time and 295 part-time. Although a description of these employment opportunities was not obtained, it was assumed that much of the park maintenance would be related to the care of trees, shrubs, and grass. Thus, many of these jobs could well be filled by individuals trained in similar programs as would be required for jobs listed under plant related occupations.

An area for which training is sometimes offered in agricultural mechanics is that of small gasoline engine repair. Thus, a survey of the job opportunities in small gasoline engine repair was included in the total survey of job opportunities in applied biological and agricultural occupations. The results of this survey indicated that only a few persons were needed both at the time

of the survey and the projected turnover for the five years following the survey. The greatest projected need was for part-time parts men and full- and part-time mechanics. It would appear that the need identified here could be met by the industrial oriented auto mechanics students and the distributive education students.

The question of the value of specific high school training to becoming employed in an occupation in the areas surveyed received a resounding "yes" that such preparation would influence the employee's selection of new employees. While not unanimous, most employers indicated that some preference would be given to the students with such training. In addition, only a slightly higher percentage of the respondents indicated that they would hire recent high school graduates. Thus, it was assumed that some employers would not hire a recent high school graduate with or without specific training related to the prospective employment. It was also assumed that the percentage of employers who would hire recent high school graduates with specific training would have been greater if the employers who would not hire recent high school graduates would have been excluded.

Conclusions

Conclusions drawn from the survey of job opportunities in the various areas of applied biological and agricultural occupations relate to the feasibility of developing programs for the preparation of young men and women for these occupations. These conclusions are:

1. Ample job opportunities exist in the city of Chicago and the 46 surrounding suburbs to merit the implementation of vocational programs in applied biological and agricultural occupations.

2. Employers in business in the are of applied biological and agricultural occupations prefer individuals who have had specific high school training related to the job.

3. Two major areas of applied biological and agricultural occupations were identified with commonalities such that students could be grouped for instruction: occupations relating to plants and those relating to animals. Specific courses could be offered in addition to the courses in common. Thus, only two new curricula would be necessary. In addition specific training could be offered through on-the-job instruction in the many part-time jobs identified.

4. The researchers undoubtedly failed to identify all businesses in which specific training in applied biological and agricultural occupations would be an asset both in getting the job and performing the task required after obtaining the job. School districts will need to make an indepth study of their communities to determine the employment opportunities as well as the opportunities for employment for on-the-job training through cooperative vocational education. These surveys can best be conducted through face-to-face interviews with the employers.

5. The number of individuals hired during the year prior to the study was a better indicator of future employment opportunities than was the estimate of turnover during the five years following the survey.

6. Future surveys to ascertain the employment opportunities should be accomplished through face-to-face interviews.

APPENDIX V-A

EXAMPLE SURVEY FORM

University of Illinois

Survey of Employment Opportunities
FLORICULTURE

Firm Name_____ Telephone_____Ext._____

Address_____ City_____ State_____ Zip_____

****

INSTRUCTIONS: 1. Below is a listing of various job titles which may be appropriate to your business. Please add other titles that may apply and disregard those listed areas that do not apply.

2. After reviewing the example please place the correct number in each square as it applies to your business.

****

*Key Punch Refer Col	Job Titles	Present No. Employed		Present Vacancies		Additions-Turnovers Next 5 Yrs		Years of Educ Desired	
		Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time
	EXAMPLE: Deliveryman	1	3	0	1	2	15	12	11
10-25	Manager								
26-41	Designer								
42-57	Salesman								
58-73	Deliveryman								
10-25	Bookkeeper								
26-41	Special Events Cons.								
42-57	Greenhouse Maintenance								
58-73									
10-25									
26-41									
42-57									
58-73									

		Full Time	Part Time
10-13	How many new employees have you hired during the past year?		
14-17	On the average how long (in months) does it take you to fill a vacancy?		
18	Would specific high school training relative to your business influence your selection of potential employees? . . . . . Yes___ No___		
19	If you had a vacancy would you hire a new high school graduate who has had specific training related to your business? . . . . . Yes___ No___		

PERSON PROVIDING THIS INFORMATION:

Name_____ Position_____Date_____

COMMENTS:

*Disregard the Key Punch Reference Column when filling out this questionnaire, it is for computer use only.

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APPENDIX V-B

COVER LETTERS

April 6, 1971

Dear Sir:

The University of Illinois needs your help. We are engaged in a research project to determine occupational interests of students in the Chicago vicinity and to determine if their interests are realistic in relation to the job market.

As a result of this study we hope the schools in the Chicago area will develop occupational programs that will better serve the needs of the students and your industry. Information that we receive will be used only for statistical purposes. Your occupational needs will not be advertised as we are not a placement bureau.

To make this research worthwhile we need information that only you can provide. Would you please take a few minutes and complete the enclosed questionnaire and return it in the envelope provided? It would be helpful to our research if the information could be returned by Thursday, April 15, 1971.

Sincerely,

Hollie B. Thomas, Director
Metropolitan Agriculture Programs
359 Education Building

Ali Ammadi, Staff
Franklin Jackson, Staff
William Lundell, Staff
Art Neavill, Staff

HBT:nf
Enclosures

April 21, 1971

Dear Sirs:

We have not received your completed employment opportunities questionnaire sent to you on April 6. Perhaps it has been lost in the mail or misplaced. We apologize for our poor timing in sending the questionnaire during the income tax and Easter season.

As was mentioned in a previous correspondence, the Vocational and Technical Education Department is engaged in a study to determine if there is a need for trained individuals in your industry. The study will be of little value in proposing new occupational programs if we are unable to determine the occupational employment needs. Only you can provide this information that is vital to our program and hopefully beneficial to you in the future.

If you have not already mailed the questionnaire, please take a few minutes and complete the enclosed questionnaire and return it in the envelope provided.

Thank you very much for your cooperation and time.

Sincerely,

Hollie B. Thomas, Director
Metropolitan Agriculture Programs
359 Education Building

Ali Ammadi, Staff
Franklin Jackson, Staff
William Lundell, Staff
Art Neavill, Staff

HBT:nf
Enclosures

May 12, 1971

Dear Sirs:

Your assistance is needed!! We have not received your response about employment opportunities in your business.

We, in the Vocational and Technical Education Department, Agricultural Education Division, are attempting to correlate industrial needs with needs for new types of vocational programs in the Chicago metropolitan schools. All of the information which you provide will be held in confidence and used only for statistical purposes. Your efforts to complete the enclosed form will be greatly appreciated and hopefully beneficial to yourself and others in the industry.

Thank you very much for your time and cooperation.

Sincerely,

Hollie B. Thomas, Director
359 Education Building

Ali Ammadi, Staff
Franklin Jackson, Staff
William Lundell, Staff
Art Neavill, Staff

HBT:nf
Enclosure